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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,579

Applicant(s)

KIM ET AL.

Examiner

Joseph D. Torres

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) 15-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 27/05. 7115/04. 11-13-01
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

PD

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-8) in the reply filed on 08/11/2004 is acknowledged. The traversal is on the ground(s) that "Claim 15 defines that the rearranging operation is previously performed on a plurality of sub-code sets, and Claims 1 and 3 define that the rearranging operation is performed on each sub-code set". This is not found persuasive because the Applicant's arguments appear to support the Examiners contention that the different inventions have different technical features that would require a different search and analysis of the claims.

The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 15-17 drawn to an invention nonelected with traverse.

A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

2. The drawings were received on 02/06/2002. These drawings are accepted.

Response to Arguments

3. Applicant's arguments filed 05/27/2005 have been fully considered but they are not persuasive.

The Applicant contends, "The Examiner objected to the specification based on informalities. The Examiner alleges, 'the Applicant appears to be using sub-code to have two different meanings.' The Examiner is incorrect in his general position, as well as in his mischaracterization of how the term sub-code is used on page 10, lines 7-18. 'sub-code' is used consistently throughout the specification and the claims; 'sub-code set' is also used consistently throughout the specification and the claims. It is respectfully 'submitted that the specification and claims should be read as is, namely, read 'sub- code' as a sub-code, and 'sub-code set' as a sub-code set".

The Examiner would like to point out that the Examiner objected to the use of sub-code not "sub-code set" and if the use of sub-code is clear, then so is the use of "sub-code set". The Applicant states that sub-code is being used consistently, but nowhere in the response does the applicant Address the Examiner's argument and explicitly point out how sub-code is being used. A code generally refers to a set of codewords that a message string can be mapped to. Codewords from the code are transmitted, not the code. If the Applicant is using sub-code to refer to a subset of a code, then only the codewords from the sub-code are transmitted, not the sub-code. The Examiner is requesting that the Applicant confirm how sub-code is being used by providing a precise definition, relating sub-code to code. It appears also in the specification that the Applicant is also doing the same thing with code, i.e., using code to refer to a set of codewords that a message string can be mapped to and a codeword. Note: the Applicant only has to confirm which of the two acceptable definitions for sub-code that the Applicant is using: 1. a subset of codewords belonging to a code that a message

Art Unit: 2133

string can be mapped to or 2. a codeword that can be transmitted. The Examiner is also requesting that the Applicant provide a definition of code since the Applicant appears to have the same problem with code. Note: the Applicant only has to confirm which of the two acceptable definitions for code that the Applicant is using: 1. a set of codewords that a message string can be mapped to or 2. a codeword that can be transmitted.

The Applicant contends, "The Examiner rejected Claims 1-8 under 35 U.S.C. §112, first paragraph, as being non-enabling. The Examiner alleges that quasi-complementary turbo code (QCTC) is not adequately defined in the specification. It is respectfully submitted that QCTC is well known in the art, and further as from page 3 in the specification, the entire description defines and explains the generation of QCTCS". If the Application provides a definition, the Applicant should be able to state what that definition is. The Examiner is requesting that the Applicant provide the definition of QCTC. Likewise, if QCTCs are so well known in the art, the Applicant should be able to point out a document and provide a definition of QCTC (the Examiner reminds the Applicant of the Applicant's duty to disclose)

The Applicant contends, "In addition the second paragraph on page 3 has been amended to read, 'In this context, QCTCS have been proposed to increase performance in a soft combining-using system. For details of the QCTCS, see Korea Patent Application No. P2000-62151 filed by the present applicant and filed in the U.S. Patent and Trademark Office on October 17, 2001 and assigned Serial No. 09/981.934.'"

Art Unit: 2133

Application 09/981,934 does not provide a definition for QCTC anywhere in the Application.

The closest thing to a definition is the statement, "In view of the sub-codes being produced from turbo codes, they will be called quasi-complementary turbo codes (QCTCs)" found in the last paragraph on page 16 of 09/981,934 which basically says a QCTC is a sub-code of a turbo code. The Examiner is requesting that the Applicant confirm whether this is the Applicant definition of a QCTC or not.

The Applicant contends, "The Examiner rejected Claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite and/or incomplete. The majority of the rejections are addressed above with respect to the concept of a set and its elements. The Examiner states that Claim 5 is unclear. Claim 5 has been amended to read 'each sub-code of the sub-code set being a matrix format with elements representing repetition and puncturing positions'.

Claim 1 recites, "rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted after a sub-code with a predetermined code rate", which contradicts claim 5 since claim 1 states that a sub-code is a transmitted value, not a matrix. The issues in claim 5 cannot be resolved until the Applicant decides how the Applicant intends to use the term sub-code.

The Applicant contends, "The Examiner states that Claim 6 is unclear, in that he does not understand what 'plurality of given code rates' modifies. Claim 6 has been amended

Art Unit: 2133

to read 'said sub-codes sets corresponding to a plurality of given code rates". The issues in claim 6 cannot be resolved until the Applicant decides how the Applicant intends to use the term sub-code.

The Applicant contends, "Any and all of the remaining rejections are unclear and vague, and it is respectfully requested that the Examiner present specific rejections, if necessary, such that a proper reply can be submitted; general statements as to alleged conditions of claims are difficult to address". The issues in claim 6 cannot be resolved until the Applicant decides how the Applicant intends to use the term sub-code.

The Applicant contends, "The Examiner rejected Claims 1-5 under 35 U.S.C. §101 as being directed to non-statutory subject matter. As there is neither any requirement under 35 U.S.C. §101, nor under any regulation promulgated there under, that a claim recite any hardware to carry out a limitation, nor is there any requirement under 35 U.S.C. §101, nor under any regulation promulgated there under, that a claim limitation not be carried out by hand or in a computer program", it is respectfully submitted that no statutory based rejection has been raised, and therefore no reply can be asserted. Withdrawal of the rejections is respectfully requested".

The Examiner asserts that abstract algorithms, computer programs and descriptive material, in general, in and of themselves, have been deemed non-statutory. See MPEP 2106, page 2100-11, Non-Statutory subject matter. MPEP 2106 also gives many good examples for overcoming U.S.C. §101 issues.

The Applicant contends that Park does not teach the elements in claim 1. The Examiner disagrees and asserts that Figure 13 teaches generating sub-code sets of QCTCS with given code rates (the Abstract in Park teaches that each of the Rate Matchers in Figure 13 includes a puncturer and a punctured turbo code is a sub-code of the turbo code; hence the three rate matchers in Figure 13 each produce a sub-code of a turbo code and comprise a set of three turbo sub-codes); and rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted after a sub-code with a predetermined code rate (MUX 1304 takes a parallel stream of codewords from the rate matching units and rearranges the parallel stream in a serial stream; Note: the input to the MUX is data arranged in a parallel format and the MUX rearranges the data so that the output can be transmitted in a serial format).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "Park does not disclose that the sub-code set includes sub-codes having an identical code rate" [Emphasis Added]) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Art Unit: 2133

The Applicant contends, "the Examiner has not properly cited any reference to reject that element of Claim 6 that recites, 'said sub-codes corresponding to a plurality of given code rates', nor the element that recites, 'storing the rearranged sub-codes'".

The Examiner disagrees and asserts that each of the Rate Matcher in Figure 13 produces codewords of a sub-code corresponding to different code rates and that an interleaver is a storage device not only for storing the codewords of the different sub-codes but also for rearranging the sub-codes.

The Applicant contends, "The Examiner alleges that he has rejected Claims 2-5, 7 and 8 under 35 U.S.C. j103(a) as being unpatentable over Park et al. in view of Mousley, but as the Examiner does not present any rejections of Claims 3, 4, 5, 7 or 8 in the Office Action, a proper reply is not possible".

The claims will be examined when on their merits when all 112 and 101 issues are removed from independent claims 1 and 6.

The Examiner disagrees with the applicant and maintains all rejections of claims 1-8. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 1-8 are not patentably distinct or non-obvious over the prior art of record in view of the references, Park; Chang-Soo et al. (US 6397367 B1, hereafter referred to as Park) in view of Mousley; Timothy J. (US 6671851 B1) as applied in the last office action, filed 01/25/2005. Therefore, the rejection is maintained.

Specification

4. The disclosure is objected to because of the following informalities: the Applicant appears to be using sub-code to have two different meanings which renders the use of sub-code in the claims indefinite. For example in lines 7-18 on page 10 of the Applicant's specification, the applicant is clearly using sub-code to mean a set of codewords defined by a particular algorithm for generating codewords since a code rate is a property of the set of codewords and not the codewords themselves. In addition, the applicant associates each sub-code with a generating matrix for generating the sub-code. However, in claim 1 the Applicant recites "rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted", which implies that the Applicant is using sub-code to mean a codeword or codeword symbols since codewords are transmitted, i.e., the codeword symbols generated by the matrix representation for the sub-code are transmitted, not the matrix or the sub-code. Appropriate correction is required.

The Examiner would like to point out that the Examiner objected to the use of sub-code not "sub-code set" and if the use of sub-code is clear, then so is the use of "sub-code set". The Applicant states that sub-code is being used consistently, but nowhere in the response does the applicant address the Examiner's argument and explicitly point out how sub-code is being used. A code generally refers to a set of codewords that a message string can be mapped to. Codewords from the code are transmitted, not the code. If the Applicant is using sub-code to refer to a subset of a code, then only the codewords from the sub-code are transmitted, not the sub-code. The Examiner is

Art Unit: 2133

requesting that the Applicant confirm how sub-code is being used by providing a precise definition, relating sub-code to code. It appears also in the specification that the Applicant is also doing the same thing with code, i.e., using code to refer to a set of codewords that a message string can be mapped to and a codeword. Note: the Applicant only has to confirm which of the two acceptable definitions for sub-code that the Applicant is using: 1. a subset of codewords belonging to a code that a message string can be mapped to or 2. a codeword that can be transmitted. The Examiner is also requesting that the Applicant provide a definition of code since the Applicant appears to have the same problem with code. Note: the Applicant only has to confirm which of the two acceptable definitions for code that the Applicant is using: 1. a set of codewords that a message string can be mapped to or 2. a codeword that can be transmitted.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A clear and definite definition of quasi-complementary turbo codes is critical or essential to the practice of the invention, but is not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Note: references to foreign documents not written in English

Art Unit: 2133

or examples of what a quasi-complementary turbo code may be do not comprise a definition.

The closest thing to a definition is the statement, "In view of the sub-codes being produced from turbo codes, they will be called quasi-complementary turbo codes (QCTCs)" found in the last paragraph on page 16 of 09/981,934 which basically says a QCTC is a sub-code of a turbo code. The Examiner is requesting that the Applicant confirm whether this is the Applicant definition of a QCTC or not.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted after a sub-code with a predetermined code rate" [Emphasis Added], which is incomprehensible. The language in the limitation is ambiguous and indefinite.

In particular, the relationship between sub-code sets and a QCTC is indefinite, that is, it is not clear whether sub-code sets refers to a set of sub-codes whereby a particular sub-code within the set of sub-codes is defined by a particular algorithm for generating codewords of the sub-code or whether the applicant is attempting to use sub-code sets

Art Unit: 2133

to refer to sets whereby each sub-code set contains codewords or portions of codewords of the sub-code defined by a particular algorithm for generating codewords.

The phrase “rearranging **sub-codes of a sub-code** set” [Emphasis Added] gives the impression that sub-code sets refers to a set of sub-codes whereby a particular sub-code within the set of sub-codes is defined by a particular algorithm for generating codewords, whereas the phrase “**is to be transmitted**” [Emphasis Added] gives the impression that the Applicant is attempting to use sub-code sets to refer to sets whereby each sub-code set contains codewords or portions of codewords of the sub-code defined by a particular algorithm for generating codewords since a sub-code defined by a particular algorithm for generating codewords cannot be transmitted.

Claim 2 recites, “the sub-code is a matrix”. A sub-code is a set of codewords defined by a particular algorithm for generating codewords of the sub-code, not a matrix. The Examiner assumes the matrix is a generator used for generating the sub-code.

Claims 3, 5 and 7 recite, “generating new sub-code sets, a matrix for each sub-code in each new sub-code set having as many columns as the least common multiple of the numbers of columns of each sub-code in **the sub-code sets**” [Emphasis Added]. The sub-code sets includes the new sub-code sets since a new sub-code set is still a sub-code set, which renders the previously quoted language meaningless.

Claim 5 recites, “each sub-code of the sub-code set being a matrix”. A sub-code may be represented by a matrix or generated by a matrix since a sub-code is the set of codewords generated by a particular algorithm, but a sub-code is not a matrix.

Art Unit: 2133

Claim 5 recites, "generating sub-code sets of QCTCs corresponding to a plurality of given code rates, each sub-code of the sub-code set being a matrix with elements representing repetition and puncturing", which is indefinite since it is not clear whether the "plurality of given code rates" refers to the code rates of the sub-codes or the code rates of the QCTCs

Claim 6 recites, "rearranging sub-codes in sub-code sets of QCTCs corresponding to a plurality of given code rates and storing the rearranged sub-codes", which is indefinite since it is not clear whether the "plurality of given code rates" refers to the code rates of the sub-codes or the code rates of the QCTCs

Claims 1-8 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

Claim 1 recites, "rearranging sub-codes of a sub-code set with a same or different code rate that is to be transmitted after a sub-code with a predetermined code rate" [Emphasis Added]. In particular, the relationship between sub-code sets and a QCTC is indefinite, that is, it is not clear whether sub-code sets refers to a set of sub-codes whereby a particular sub-code within the set of sub-codes is defined by a particular algorithm for generating codewords of the sub-code or whether the applicant is attempting to use sub-code sets to refer to sets whereby each sub-code set contains codewords or portions of codewords of the sub-code defined by a particular algorithm

Art Unit: 2133

for generating codewords. The omitted structural cooperative relationships are: the relationship between QCTCs, sub-codes and codewords of either the QCTCs or the sub-codes.

Claim 2 recites, "the sub-code is a matrix". The omitted structural cooperative relationships are: the relationship between "the sub-code" and a "matrix".

Claims 3, 5 and 7 recite, "generating new sub-code sets, a matrix for each sub-code in each new sub-code set having as many columns as the least common multiple of the numbers of columns of each sub-code in **the sub-code sets**" [Emphasis Added]. The omitted structural cooperative relationships are: the relationship between "priority", "new sub-code sets" and a "the sub-code sets".

Claims 3, 5 and 7 recite, "determining priority of the matrixes of sub-codes in each new sub-code set so that a matrix generated by combining matrixes from two of the new sub-code sets has a QCTC characteristic". The omitted structural cooperative relationships are: the relationship between "priority", "QCTCs" and a "QCTC characteristic".

Claim 5 recites, "generating sub-code sets of QCTCs corresponding to a plurality of given code rates, each sub-code of the sub-code set being a matrix with elements representing repetition and puncturing". The omitted structural cooperative relationships are: the relationship between "QCTCs" and "sub-code".

Claim 6 recites, "rearranging sub-codes in sub-code sets of QCTCs corresponding to a plurality of given code rates and storing the rearranged sub-codes". The omitted

Art Unit: 2133

structural cooperative relationships are: the relationship between “sub-codes” and “QCTCs”.

Claim 6 recites, “transmitting symbols using a sub-code in the sub-code set of the selected QCTC”. The omitted structural cooperative relationships are: the relationship between “symbols” and a “sub-code”.

The Examiner asserts that claims 1-8 are replete with 112 problems and appear to be a foreign translation. The Applicant must review and revise the claims so that they are written in grammatically correct idiomatic English making use of a translator, if necessary.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-5 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. There is no limitation in any of claims 1-8 that even suggest that any hardware is required to carry out the limitations in claims 1-8 since turbo codes can be generated using a generator matrix and since claim 1 recites that the rearrangement takes place on sub-codes to be transmitted, but does not recite any step for transmitting over a channel requiring hardware for transmitting. Hence claims 1-8 are non-statutory since all of the limitations in claims 1-8 can be carried out by hand or in a computer program.

Art Unit: 2133

The Examiner asserts that abstract algorithms, computer programs and descriptive material, in general, in and of themselves, have been deemed non-statutory. See MPEP 2106, page 2100-11, Non-Statutory subject matter. MPEP 2106 also gives many good examples for overcoming U.S.C. §101 issues.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Park; Chang-Soo et al. (US 6397367 B1, hereafter referred to as Park).

See the Non-Final Action filed 01/25/2005 for detailed action of prior rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 2-5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park; Chang-Soo et al. (US 6397367 B1, hereafter referred to as Park) in view of Mouldsley; Timothy J. (US 6671851 B1).

See the Non-Final Action filed 01/25/2005 for detailed action of prior rejections.

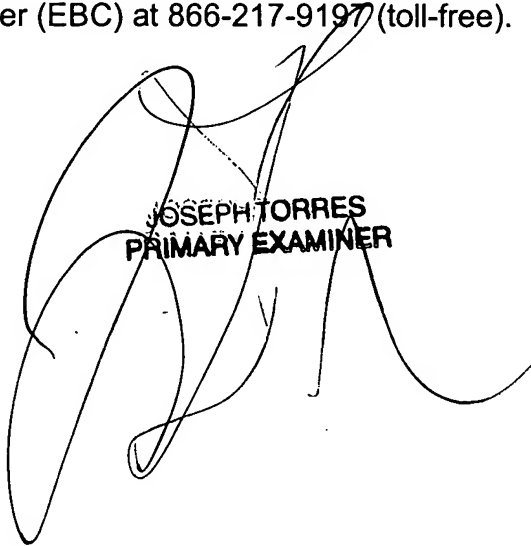
Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JOSEPH TORRES
PRIMARY EXAMINER

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133